in brief...

# Modern management: good for the environment or just hot air?

Using CEP's extensive survey data on management practices around the world, **Nick Bloom** and colleagues examine whether well-managed firms are more or less energy-efficient than badly managed firms.

Well-managed firms tend to have better economic performance and offer a more desirable work-life balance for their employees, according to a series of recent CEP studies. But in a world dominated by debates about climate change and energy savings, a broader question is whether these superior results come at the expense of the environment.

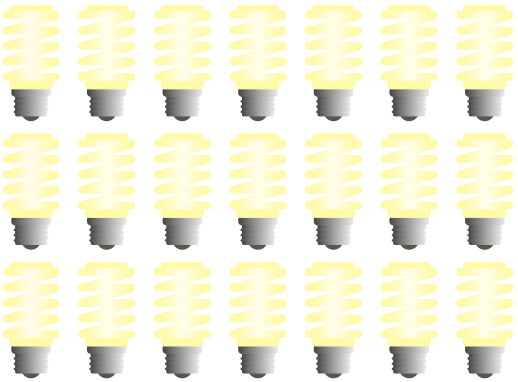
On the one hand, better-managed firms should be able to reduce energy use through more efficient production techniques. On the other hand, the higher productivity that good management involves may also require more physical capital and potentially higher energy usage. So the relationship between management practices and energy intensity is, *a priori*, ambiguous.

We have gathered the first systematic evidence on how the quality of management relates to firms' energy intensity, a key driver of greenhouse gas emissions. To measure management practices, we use an interview-based evaluation tool that defines and scores from one ('worst practice') to five ('best practice) 18 basic practices. The evaluation tool, which was developed by an international consulting firm, scores these practices in three broad areas.

The first is monitoring: how well do companies track what goes on inside their firms, and use this information for continuous improvement? The second is target-setting: do companies set the right targets, track the right outcomes and take appropriate action if the two don't tally? The third is incentives: are companies promoting and rewarding employees based on performance, and systematically trying to hire and keep their best employees?

We have applied the tool to thousands of medium-sized manufacturing firms around the world to compare management practices and energy use across firms and countries. The UK is particularly well suited for this exercise as both its management score and its carbon dioxide emissions are close to the average in our sample.

We match information on management practices in a sample of around 300 UK manufacturing firms with new data on energy efficiency from the Census of Production for the establishments owned by these firms.



Going from 'bad' to 'good' management is associated with a 17.4% reduction in energy intensity

The results indicate that well-managed firms are substantially less energy-intensive than badly managed firms. Going from the 25th to the 75th percentile of management practices – moving from 'bad' to 'good' management – is associated with a 17.4% reduction in energy intensity.

The reduction in energy intensity associated with good management is robust to a variety of controls for industry, location, technology and other factor inputs. And it is large: given that carbon dioxide emissions are growing at about 3% a year globally, a 17.4% reduction is equivalent to about six years' growth.

The main reason that better management reduces energy use is that modern management systems, like Toyota's 'lean manufacturing system', explicitly promote waste reduction. One of the four buzzwords that any visitor to a Toyota plant learns is 'Muda' or waste. (The others are 'Kaizen', continuous improvement; 'Andon', the cord used to stop the line after a defect; and 'Kanban', the replenishment signal system used to minimise inventories.)

Toyota employees are trained and rewarded for continuously reducing 'Muda' throughout the factory. They do so with the aim of cutting costs and increasing profits, rather than from any strong

environmental concern. In contrast, badly run firms are simply not able to achieve energy efficiency. Think of the Soviet-era factories with their terrible management practices producing huge amounts of pollution.

So how can governments help firms to improve management practices and reduce energy use? We have identified several key factors that appear to play an important role in shaping management practices – and which can also play an important role in reducing pollution while delivering economic growth.

We find that product market competition is associated with significantly better management practices. In particular, the tail of badly managed firms shrinks in highly competitive markets. Badly managed firms appear to improve their management practices or exit in competitive markets.

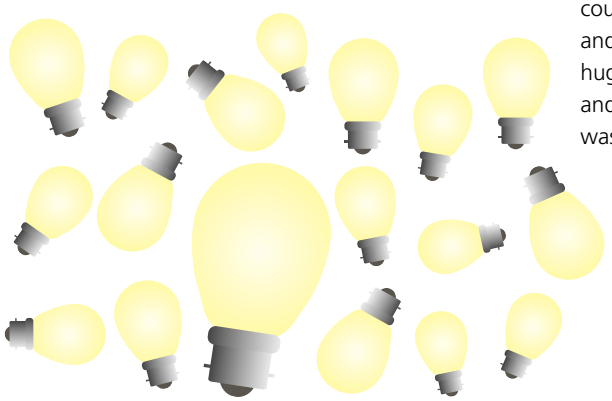
Thus, the highly competitive product markets in the United States have led to almost no badly managed firms left in operation. In contrast, many product markets in Brazil, China and India have limited competition due to entry barriers, trade regulations and high transport costs, enabling badly managed firms to survive.

Multinational status also appears to play an important role in determining firms' management practices. Multinationals tend to be well-run whether they are located in Brazil, India or the United States.

In other work, we show that the affiliates of US multinationals located in Europe are able to use their managerial advantage to make better use of information technology (IT) to raise productivity. We argue that multinationals are excellent vehicles for transporting productive and energy-efficient management practices across countries.

Our results suggest that policies aimed at improving management practices – such as encouraging competition by removing barriers to market entry, reducing trade barriers and promoting multinational ownership – will also improve environmental outcomes.

Improving management may provide a way both to increase economic growth and to reduce environmental damage. And while this particular research focuses on the UK, the potential appears far greater in developing countries such as Brazil, China and India, where there is a huge tail of badly managed – and presumably energy-wasteful – firms.



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This article summarises 'Modern Management: Good for the Environment or Just Hot Air?' by Nick Bloom, Christos Genakos, Ralf Martin and Raffaella Sadun, CEP Discussion Paper No. 891 (http://cep.lse.ac.uk/pubs/download/dp0891.pdf).

CEP research on management, economic performance and work-life balance is summarised in previous issues of *CentrePiece*: 'Bossonomics' (http://cep.lse.ac.uk/pubs/download/cp293.pdf) and 'Work-Life Balance' (http://cep.lse.ac.uk/pubs/download/cp202.pdf). CEP research on US firms' use of IT is summarised in 'It Ain't what You Do, It's the Way that You Do I.T.' (http://cep.lse.ac.uk/pubs/download/cp188.pdf).

**Nick Bloom** is a professor of economics at Stanford University. **Christos Genakos** is a lecturer in economics at Cambridge University. **Ralf Martin** is a research economist at CEP. **Raffaella Sadun** is an assistant professor at Harvard Business School. All are part of CEP's research programme on productivity and innovation.